



On the rare occurrence of the pompano Dolphinfish *Coryphaena equiselis* Linnaeus, 1758 (carangiformes: coryphaenidae) in maritime Bangladesh waters

Muntasir Akash✉, Rafsana Rahman, Rehnuma Jahan, M Niamul Naser

Department of Zoology, Faculty of Biological Sciences, University of Dhaka, Dhaka 1000, Bangladesh

✉Corresponding author

Department of Zoology, Faculty of Biological Sciences, University of Dhaka, Dhaka 1000, Bangladesh; Email: m17.zoo@du.ac.bd

Article History

Received: 12 May 2020

Accepted: 18 June 2020

Published: June 2020

Citation

Muntasir Akash, Rafsana Rahman, Rehnuma Jahan, M Niamul Naser. On the rare occurrence of the pompano Dolphinfish *Coryphaena equiselis* Linnaeus, 1758 (carangiformes: coryphaenidae) in maritime Bangladesh waters. *Species*, 2020, 21(68), 227-231

Publication License



© The Author(s) 2020. Open Access. This article is licensed under a [Creative Commons Attribution License 4.0 \(CC BY 4.0\)](https://creativecommons.org/licenses/by/4.0/).

General Note



Article is recommended to print as color digital version in recycled paper.

ABSTRACT

Herein, we describe a rare documentation of the pompano Dolphinfish, *Coryphaena equiselis* Linnaeus, 1758, from the maritime waters of Bangladesh comprising northern rim of the Bay of Bengal. In addition to providing the morphomeristic characters, we discuss its trend of presence. The species never appeared in the region in any studies after 2007. This is owing to strong similarity with the larger congener common Dolphinfish *Coryphaena hippurus* (Linnaeus, 1758) in preserved state and to the lack of systematic pelagic surveys. Presence of Dolphinfishes indicates a stable system in the bay for the commercially significant billfishes and tunas.

Keywords: Common Dolphinfish, Bay of Bengal, Bangladesh, New Records

1. INTRODUCTION

The oligotypic family Coryphaenidae consists of two oceanic, medium-sized, ray-finned fishes under the single genus *Coryphaena* (Collette et al., 2011). Epipelagic in habitat and living at a depth of around 200 m, both pompano Dolphinfish *C. equiselis* and larger common Dolphinfish *C. hippurus* possesses a circumtropical distribution (Collette et al., 2011, Saroj et al., 2018). Frequenting from oceanic waters to shallow seas, Dolphinfishes are known for their migratory nature; reportedly move to warmer seas though it is most common in waters between 21-30°C (Saroj et al., 2018). However, pompano Dolphinfish *C. equiselis* is considered as more oceanic (Gibbs and Collette, 1959).

With a slender, tapering body, Dolphinfishes are fast predators, put up a spectacular show in live condition, and a great game when caught in line weighing generally between 14-30 kg and growing up to 1-2 m (Gibbs and Collette, 1959). These game fishes possess good growth rate, provide a link to the food chain associated with tunas and billfishes (Collette, 2011, Collette et al., 2011). They are reputed for their taste across their range in the Indian, Atlantic, Pacific Oceans and in the Mediterranean Sea (Collette, 2011). Thus, the genus is of potential aesthetic, economic and ecological value.

Also goes by the Hawaiian name, Mahi-mahi, these fishes are eponymous to cetacean dolphins supposedly due to their communicating ability to detect and discern acoustic cues (Dempster and Kingsford, 2003). The naming is also believed due to their size similar to smaller dolphin species. Historically, they were called *Dorado* in Spanish referring to the golden color; the term was used to indicate both – the cetaceans and the fishes.

In the Indian Ocean, *Coryphaena* is well documented, often landed in significant number along the coast of Gujarat and the Andaman Sea (Collette et al., 2011, Saroj et al., 2018). However, in Bangladesh waters, of the *Coryphaena*, it is *C. hippurus* that received the most anecdotes (Ahmed et al., 2008, Ahmed et al., 2009). Only mention of the deep-bodied or pompano Dolphinfish *C. equiselis* in the Bay of Bengal can be traced to the two specimens of drift gill net survey led by Chaidee et al. (2007). Another component of the same expedition i.e., survey with pelagic longline for large pelagic fishery was reported by Nuangsang et al. (2007) yielded *C. Hippurus* but not the smaller sized species.

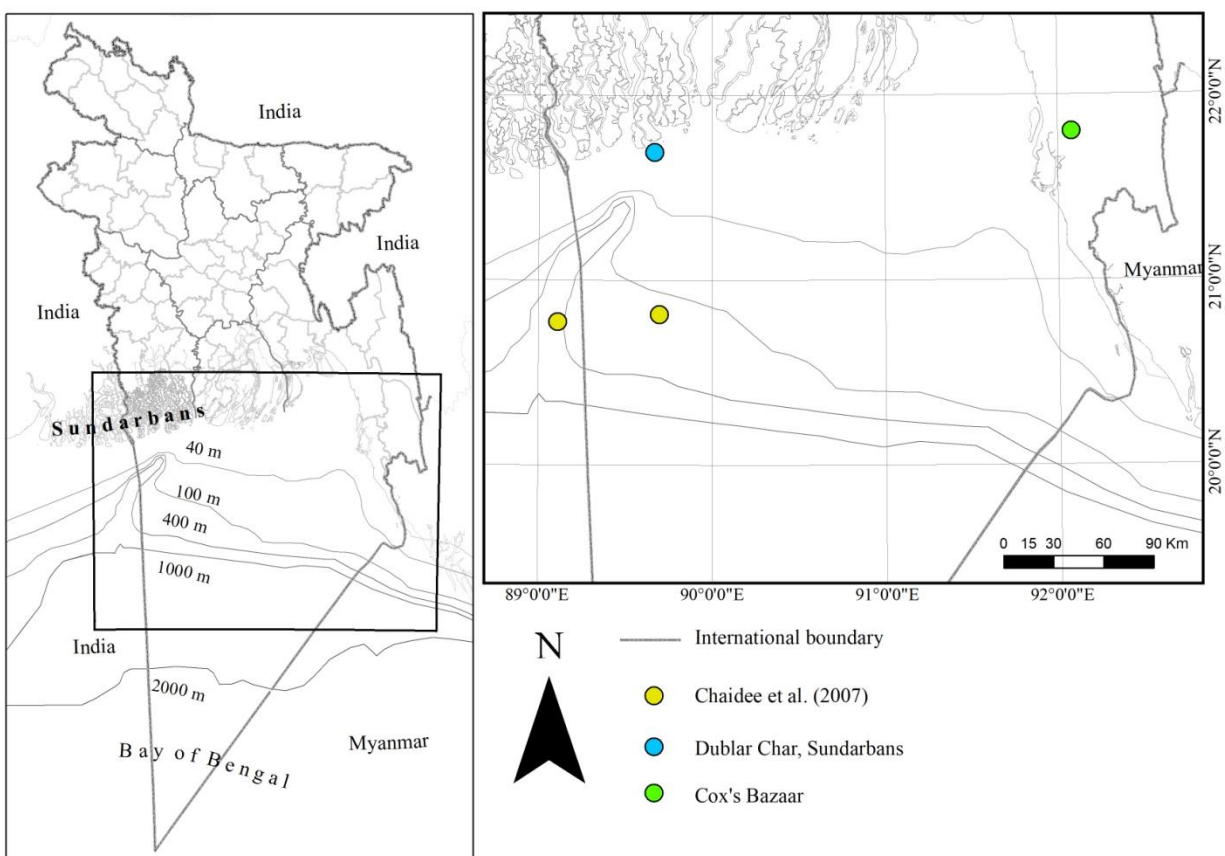


Figure 1 Localities of *Coryphaena* in the Bay of Bengal. Blue and Green circles indicate the localities found in the study, yellow circle denotes the encounters described in Chaidee et al. (2007).

2. MATERIALS AND METHODS

During an expedition to the Sundarbans conducted from 24/01/2020 to 30/01/2020, we came across a *Coryphaena* specimen from the vessel kitchen, purportedly collected from a fish landing station from an outer mangrove rim (N: 21°43'20.91", E: 89°36'17.79"; Fig. 1) embedded into the Bay. Later on, during identification process, another observation from the fisheries archives of the KaziZaker Husain Museum of the Department of Zoology, University of Dhaka (DU-FS) had startled us which ultimately turned as *C. equiselis*.

The specimen of *C. equiselis* was observed from the fish landing and auction station of the Bangladesh Fisheries Development Corporation in Cox's Bazar district (N: 21°27'3.09", E: 91° 58'6.21"; Fig. 1) on 14/04/2017. In addition, we provided our observation on *C. hippurus* from the same station of Cox's Bazar.

We used Nelson et al. (2016) and Ahmed et al. (2008) as initial reference materials. Later on, we followed Gibbs and Collette (1959) and Collette (2011) for pertinent morphomeristic measurements to consolidate the species identity.

3. RESULTS

Species *Coryphaena equiselis* Linnaeus, 1758

Common English name: Pompano Dolphinfish

Bengali name: *Dolphin Mach*, *Golpata Mach*

Material examined. — unsexed specimen, collected from fish landing and auction station of Bangladesh Fisheries Development Corporation in Cox's Bazar, N: 21°27'3.09" E: 91°58'6.21", 14.4.2017, DU-FS-140417-17-25.



Figure 2 Comparison between two Dolphinfinches: (A) *Coryphaena equiselis* (Standard length 57.31cm) and (B) *Coryphaena hippurus* (91.7cm). Pectoral fin-head length ratio, hump difference, insertion of dorsal fin on head and the greatest body depth are noticeable.

Our observation on the specimen went with the description of Collette (2011). The morphomeristic parameters are given in Table 1. Of the observed key features, we found the specimen distinctively deeper, dorsal fin originated on nape but just behind eye (vs. above eye on *C. hippurus*) (Fig.2). Dorsal fin ray count was 53 (vs. 63 on the observed specimen of *C. hippurus*). Pectoral fin did not reach the half of head length (vs. more than half of the head length in *C. hippurus*). One of the most distinctive traits we noted on the specimen was its body depth. On its greatest depth, though dead and vent deflated, the measurement was more than 25% of standard length (vs. body depth never exceeds 25% of standard length) (Table 1). This deep-bodied species derives the common name prefix. Regarding coloration, though not features to differ from *C. hippurus*, we saw numerous black flecks on side (vs. generally less) while the upper part was greenish silvery and the below bore a faint golden hue. We found no hump formation on forehead.

Table 1 Summary of the morphomeristics of the observed specimen of *C. quiselis* and *C. hippurus*

| Attributes | DU-FS-140417-17-25 <i>C. equiselis</i> | | DU-FS-140417-17-32 <i>C. hippurus</i> | |
|------------------------|---|-------------------|--|-------------------|
| Total weight (gm) | 2418 | | 2930 | |
| Total length (cm) | 69.5 | | 91.7 | |
| Standard Length (cm) | 57.31 | | 75.11 | |
| Fork length (cm) | 59.5 | | 80.4 | |
| | cm | % standard length | cm | % standard length |
| Pre-dorsal length | 7.97 | 13.91 | 11.3 | 15.1 |
| Pre-pelvic length | 13.61 | 23.76 | 18.86 | 25.1 |
| Pre-anal length | 33.41 | 58.30 | 45.98 | 61.23 |
| Dorsal fin base | 49.26 | 84.51 | 65.4 | 87.1 |
| Pectoral fin length | 6.43 | 11.22 | 11.13 | 14.82 |
| Pelvic fin length | 9.13 | 15.93 | 13.20 | 17.56 |
| Anal fin base | 22.5 | 39.31 | 30.67 | 40.83 |
| Body depth | 15.07 | 26.3 | 19.1 | 17.5 |
| Caudal peduncle length | 2.36 | 4.13 | 32.52 | 4.33 |
| Caudal peduncle depth | 3.01 | 5.25 | 40.48 | 5.39 |
| Head length | 12.84 | 22.41 | 16.08 | 21.42 |
| | cm | % head length | cm | % head length |
| Eye diameter | 1.81 | 14.09 | 2.6 | 16.17 |
| Pre-orbit length | 3.55 | 29.20 | 4.1 | 25.51 |
| Post-orbit length | 6.82 | 53.12 | 8.92 | 55.5 |
| Meristic characters | | | | |
| Dorsal soft rays | 53 | | 63 | |
| Anal soft rays | 27 | | 32 | |
| Pectoral fin rays | 21 | | 21 | |

4. DISCUSSION

Findings of both Dolphinfishes deem healthy food dynamics for the Bay of Bengal as noted from different waters of the Dolphinfishes' ranges (Saroj et al., 2018). We found it quite interesting not to have any dedicated works on large pelagic species from Bangladesh, let alone Dolphinfishes. Though the larger common Dolphinfish is a common sight in fish landing stations, we found no specialized work except an unpublished DNA sequence submitted at National Center for Biotechnology Information (NCBI) in 2019 (Ahmed et al., 2019).

From India, exclusive attempts to understand ecology of these are onset, in contrast, the decade-old marine fish inventory of Bangladesh is yet to see an update (Saroj et al., 2017, Ahmed et al., 2008, Saroj et al., 2018). Given the 118,813 sq km. strong maritime boundary, marine fishes of Bangladesh are not thoroughly surveyed, accounting still for about merely 500 species (Ahmed et al., 2008). However, in recent years, there is a surge on new country observations across different places from the entire coast of

the country. Anecdotes of species from diverse taxa and habitats stipulates a much higher species richness (Saroj et al., 2017, Habib et al., 2017, Haque and Hossain, 2018, Haque et al., 2019). However, these were largely from chance events by systematically visiting fish centers, unlike Nuangsang et al. (2007), and Chaidee et al. (2007).

5. CONCLUSION

We noted *C. equiselis* with morphomeristic characteristics for the first time in the maritime boundary of Bangladesh. Through this report we surmise a dire necessity to run large-scale fisheries survey, compile all the scattered findings, and make a readily available diversity database.

Acknowledgments: We are grateful to the fish traders for allowing to survey the landing center and providing the specimen.

Authors' Contributions

MA conducted the field work with the assistance of RR and RJ. MNN and MA apprehended the plan and identified the species. All authors equally contributed in preparing the manuscript. All authors reviewed and approved the manuscript.

Funding: The research was a self-funding endeavor.

Conflicts of Interest: The authors declare no conflict of interest.

REFERENCE

- Ahmed MS, Zhilik AA, Chowdhury NZ and Haque AK. *Coryphaenahippurus*. Accession No. MN083097.1. 441 bp linear DNA Nucleotide 27-OCT-2019. National Center for Biotechnology Information. 2019: <https://www.ncbi.nlm.nih.gov/nuccore/MN083097.1>. [Accessed on 22 March 2020].
- Ahmed ZU, Begum ZT, Hassan MA, Khondker M, Kabir SMH, Ahmad MA, Haque EU (eds.). Encyclopedia of flora and fauna of Bangladesh. Vol. 24. The Asiatic Society of Bangladesh, Dhaka. 2008: 228–229.
- Chaidee P, Darumas N, Chamasont O, Sada MN, Jayasinghe RPK, Chinthaka KSD, Seub UAW, Nalla J, Thapanand-Chaidee T. Marine resource surveys by drift gill net in the Bay of Bengal. The Ecosystem-Based Fishery Management in the Bay of Bengal. 2007: 1–18.
- Collette B, Acero A, Amorim AF, Boustany A, Canales Ramirez C, Cardenas G, Czarpenter KE, de Oliveira Leite Jr. N, di Natale A, Fox W, Fredou FL, Graves J, Viera Hazin FH, Juan Jorda M, Minte Vera C, Miyabe N, Montano Cruz R, Nelson R, Oxenford H, Schaefer K, Serra R, Sun C, Teixeira Lessa RP, Pires Ferreira Travassos PE, Uozumi Y, Yanez E. *Coryphaena hippurus*. The IUCN Red List of Threatened Species. 2011: e.T154712A4614989. <http://dx.doi.org/10.2305/IUCN.UK.20112.RLTS.T154712A4614989.en>.
- Collette BB. 2011. Family Coryphaenidae. In: Carpenter KE and Niem VH (eds.). The living marine resources of the Western Central Pacific. Vol. 6. FAO, Food and agriculture organization of the United Nations, Rome. 2011: 3549–3565.
- Dempster T, Kingsford MJ. Homing of pelagic fish to fish aggregation devices (FADs): the role of sensory cues. Mar Ecol Prog Ser, 2003: 258: 213–222.
- Gibbs Jr RH, Collette BB. 1959. On the identification, distribution, and biology of the dolphins, *Coryphaena hippurus* and *C. equiselis*. Bull Mar Sci, 1959: 9(2): 117–152.
- Habib KA, Kim CG, Oh J, Neogi AK, Lee YH. Aquatic Biodiversity of Sundarbans, Bangladesh. Korea Institute of Ocean Science and Technology, Ansan. 2017: 1–396.
- Haque AB, Das SA, Biswas AR. DNA analysis of elasmobranch products originating from Bangladesh reveals unregulated elasmobranch fishery and trade on species of global conservation concern. PloS One 2019: 14(9): e0222273. <https://doi.org/10.1371/journal.pone.0222273>.
- Haque AB, Hossain N. Distribution range extension and first record of Tonkin numbfish *Narcinepro dorsalis* (Bessednov 1966) (Torpediniformes: Narcinidae) an electric ray in Bangladesh waters. Bangladesh J Zool, 2018: 46(2): 147–154.
- Nelson JS, Grande TC, Wilson MV. Fishes of the World. John Wiley & Sons, New Jersey. 2016:1–752.
- Nuangsang C, Promjinda S, Chamason O, Rahman MJ, Jayasinghe RPK, Oo UAH, Sinha MK. Large pelagic fishery resource survey using pelagic longline in the Bay of Bengal. The Ecosystem-Based Fishery Management in the Bay of Bengal. 2007: 1–18.
- Saroj J, Koya KM, Mathew KL, Arti J, Panja T, Anirudhsingh P. The length-weight relationship of the common dolphinfish, *Coryphaena hippurus* Linnaeus, 1758 off Saurashtra coast, Gujarat. J Exp Zoology India, 2017: 20(2): 1009–1011.
- Saroj J, Koya KM, Mathew KL, Arti J, Panja T. GIS based mapping of common dolphinfish *Coryphaena hippurus* (Linnaeus, 1758) off Saurashtra coast, India. J Exp Zoology India, 2018: 21(2): 1103–1109.